

RF Exposure Evaluation Report

APPLICANT : Ring LLC
EQUIPMENT : Always Home Cam
BRAND NAME : ring
MODEL NAME : 5E92E9
FCC ID : 2AEUPBHAZU001
STANDARD : 47 CFR Part 2.1091
FCC KDB 447498 D01 v06

We, Sporton International (Kunshan) Inc., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Reviewed by: Nick Hu / Supervisor



Approved by: Kat Yin / Manager



Sporton International (Kunshan) Inc.

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA170120	Rev. 01	Initial issue of report	Sep. 22, 2021



1. Administration Data

1.1. Testing Laboratory

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International (Kunshan) Inc.		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-KS	CN1257	314309

Applicant	
Company Name	Ring LLC
Address	1523 26th St, Santa Monica, CA 90404, USA

Manufacturer	
Company Name	Goertek Inc.
Address	No.8877 Yingqian Street, High-Tech Industrial Development District, Weifang, Shandong, 261031, P.R.China

2. Description of Equipment Under Test (EUT)

Product Feature & Specification			
EUT Type	Always Home Cam		
Brand Name	ring		
Model Name	5E92E9		
FCC ID	2AEUPBHAZU001		
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz		
Mode	WLAN 2.4GHz : 802.11b/g/n/ HT20/ HT40 WLAN 5GHz : 802.11a/n/ac HT20/HT40/VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE		
Antenna Function Description	Mode	Ant. 1	Ant. 2
	Bluetooth BR/EDR/LE	√	-
	WLAN 2.4GHz 802.11 b/g/n SISO/MIMO	√	√
	WLAN 5GHz 802.11 a/n/ac SISO/MIMO	√	√
Antenna Type	Bluetooth: PFC Antenna WLAN: PFC Antenna		
Antenna gain	<Ant. 1> WLAN 2.4GHz: gain 1.73 dBi WLAN 5.2GHz: gain 3.46 dBi WLAN 5.3GHz: gain 5.59 dBi WLAN 5.5GHz: gain 6.69 dBi WLAN 5.8GHz: gain 6.24 dBi Bluetooth: gain 1.73 dBi <Ant. 2> WLAN 2.4GHz: gain 3.07 dBi WLAN 5.2GHz: gain 3.75 dBi WLAN 5.3GHz: gain 4.34 dBi WLAN 5.5GHz: gain 3.72 dBi WLAN 5.8GHz: gain 3.72 dBi		
HW Version	DVT1.1C		
SW Version	DVT1.1C		
EUT Stage	Identical Prototype		
Remark:			
1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description. 2. WLAN2.4GHz and WLAN5GHz supports SISO/MIMO mode, for MIMO mode power is higher than SISO mode, So only chose MIMO mode power to perform MPE calculation. 3. WLAN2.4GHz and WLAN5GHz chose the higher SISO gain as MIMO gain to perform MPE calculation.			

Comments and Explanations:

- The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.
- The maximum RF output tune up power, antenna gain also the safe distance used for evaluate RF exposure were declared by manufacturer.



3. Maximum RF average output power among production units

<Bluetooth>

Mode	Maximum Average Power (dBm)
Bluetooth BR/EDR	13.0
Bluetooth LE	9.0

<WLAN 2.4GHz MIMO Mode>

Mode	Maximum Average Power (dBm) MIMO <Ant. 1+2>	
2.4GHz	802.11b	23.00
	802.11g	21.00
	802.11n-HT20	21.00
	802.11n-HT40	19.00

<WLAN 5GHz MIMO Mode >

Mode	Maximum Average Power (dBm) MIMO <Ant. 1+2>	
WLAN 5.2GHz	802.11a	21.00
	802.11n-HT20	21.00
	802.11n-HT40	22.00
	802.11ac-VHT20	21.00
	802.11ac-VHT40	22.00
	802.11ac-VHT80	15.00
WLAN 5.3GHz	802.11a	19.00
	802.11n-HT20	21.00
	802.11n-HT40	21.00
	802.11ac-VHT20	21.00
	802.11ac-VHT40	21.00
	802.11ac-VHT80	14.00
WLAN 5.5GHz	802.11a	19.00
	802.11n-HT20	20.00
	802.11n-HT40	20.00
	802.11ac-VHT20	20.00
	802.11ac-VHT40	20.00
	802.11ac-VHT80	20.00
WLAN 5.8GHz	802.11a	22.00
	802.11n-HT20	22.00
	802.11n-HT40	22.00
	802.11ac-VHT20	22.00
	802.11ac-VHT40	22.00
	802.11ac-VHT80	21.00

Note: WLAN2.4GHz/WLAN5GHz all support SISO/MIMO mode, we only chose MIMO tune up power to perform MPE calculation conservatively for MIMO power is higher.



4. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:

- S = Power Density
- P = Output Power at Antenna Terminals
- G = Gain of Transmit Antenna (linear gain)
- R = Distance from Transmitting Antenna



5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
2.4GHz WLAN	2412	3.07	23.00	26.07	0.40	404.58	0.081	1.000
WLAN 5.2GHz	5180	3.75	22.00	25.75	0.38	375.84	0.075	1.000
WLAN 5.3GHz	5260	5.59	21.00	26.59	0.46	456.04	0.091	1.000
WLAN 5.5GHz	5500	6.69	20.00	26.69	0.47	466.66	0.093	1.000
WLAN 5.8GHz	5745	6.24	22.00	28.24	0.67	666.81	0.133	1.000
Bluetooth	2402	1.73	13.00	14.73	0.03	29.72	0.006	1.000

Note:

1. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
2. Chose the maximum power to do MPE analysis.
3. WLAN2.4GHz and WLAN5GHz chose the higher SISO gain as MIMO gain to perform MPE calculation.
4. According to the EUT characteristic, WLAN 2.4GHz and WLAN 5GHz cannot transmit simultaneously.
5. According to the EUT characteristic, WLAN and Bluetooth cannot transmit simultaneously.

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

-----THE END-----